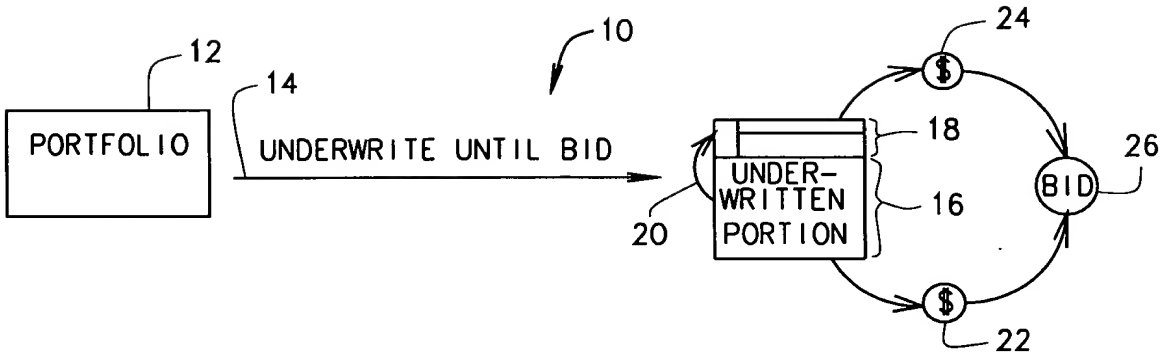

FIG. 1
PRIOR ART

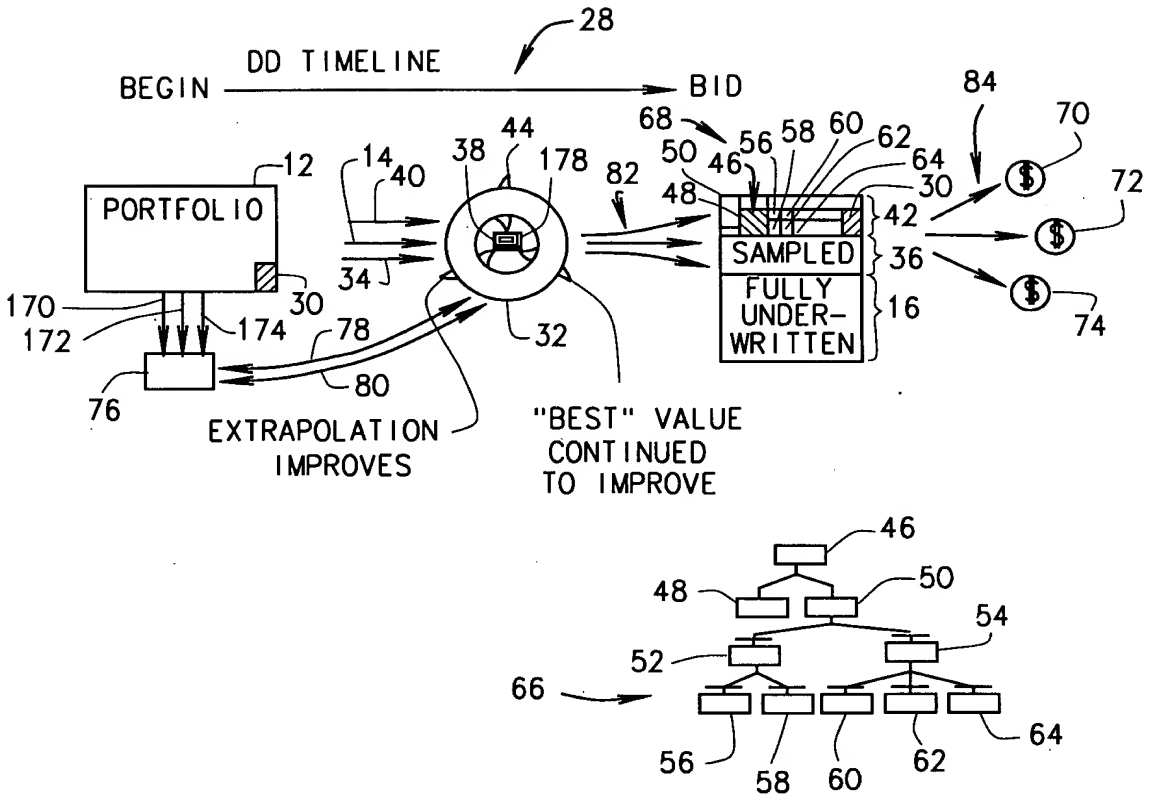
28
DD TIMELINE
BEGIN
BID
PORTFOLIO
12
14
40
38
44
178
82
68
50
46
56
58
60
62
64
48
30
42
36
16
SAMPLED
FULLY
UNDER-
WRITTEN
84
70
72
74
34
170
172
174
30
78
80
76
32
EXTRAPOLATION
IMPROVES
"BEST" VALUE
CONTINUED
TO IMPROVE
46
48
50
54
52
66
56
58
60
62
64

FIG. 2

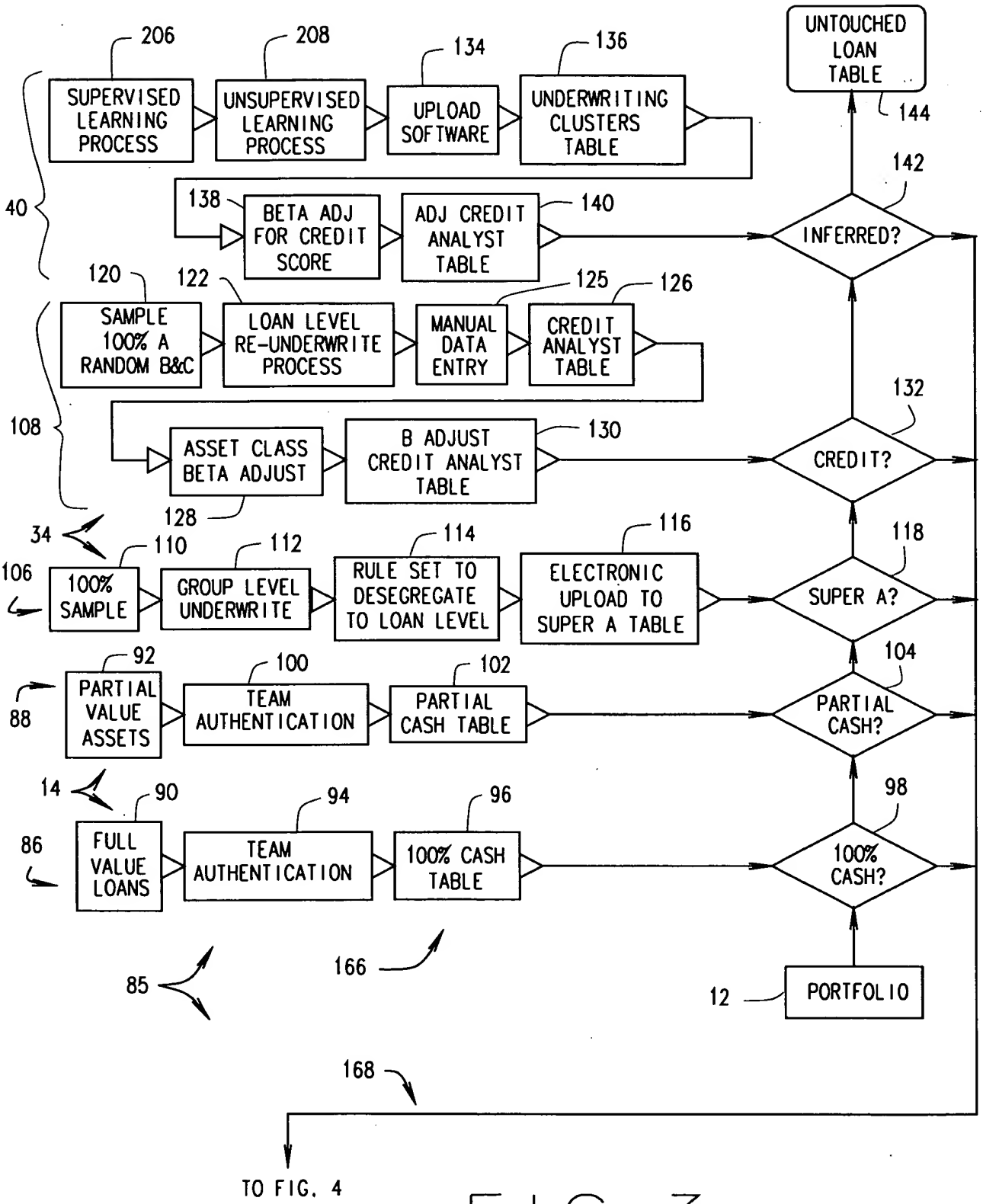
UNTOUCHED LOAN TABLE
144
206
208
134
136
SUPERVISED LEARNING PROCESS
UNSUPERVISED LEARNING PROCESS
UPLOAD SOFTWARE
UNDERWRITING CLUSTERS TABLE
142
40
138
BETA ADJ FOR CREDIT SCORE
ADJ CREDIT ANALYST TABLE
140
INFERRED?
120
122
125
126
SAMPLE 100% A RANDOM B&C
LOAN LEVEL RE-UNDERWRITE PROCESS
MANUAL DATA ENTRY
CREDIT ANALYST TABLE
132
108
ASSET CLASS BETA ADJUST
B ADJUST CREDIT ANALYST TABLE
130
CREDIT?
128
34
110
112
114
116
118
106
100% SAMPLE
GROUP LEVEL UNDERWRITE
RULE SET TO DESEGREGATE TO LOAN LEVEL
ELECTRONIC UPLOAD TO SUPER A TABLE
SUPER A?
92
100
102
104
88
PARTIAL VALUE ASSETS
TEAM AUTHENTICATION
PARTIAL CASH TABLE
PARTIAL CASH?
14
90
94
96
98
86
FULL VALUE LOANS
TEAM AUTHENTICATION
100% CASH TABLE
100% CASH?
85
166
12
PORTFOLIO
168
TO FIG. 4

FIG. 3

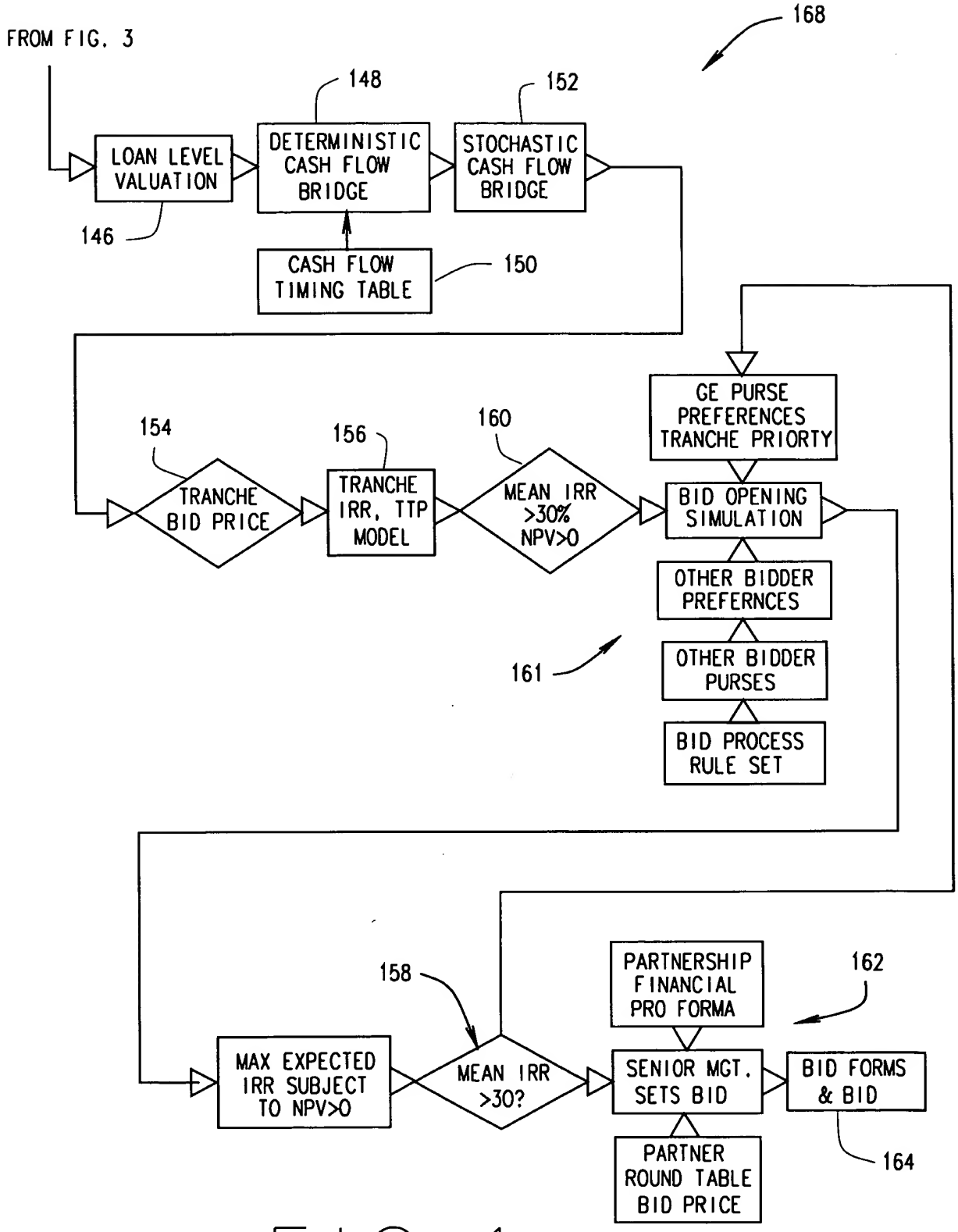
FROM FIG. 3
168
148
152
LOAN LEVEL VALUATION
DETERMINISTIC CASH FLOW BRIDGE
STOCHASTIC CASH FLOW BRIDGE
146
CASH FLOW TIMING TABLE
150
GE PURSE PREFERENCES TRANCHE PRIORTY
154
156
160
TRANCHE BID PRICE
TRANCHE IRR, TTP MODEL
MEAN IRR >30% NPV>0
BID OPENING SIMULATION
OTHER BIDDER PREFERNCES
161
OTHER BIDDER PURSES
BID PROCESS RULE SET
158
PARTNERSHIP FINANCIAL PRO FORMA
162
MAX EXPECTED IRR SUBJECT TO NPV>0
MEAN IRR >30?
SENIOR MGT. SETS BID
BID FORMS & BID
PARTNER ROUND TABLE BID PRICE
164

FIG. 4

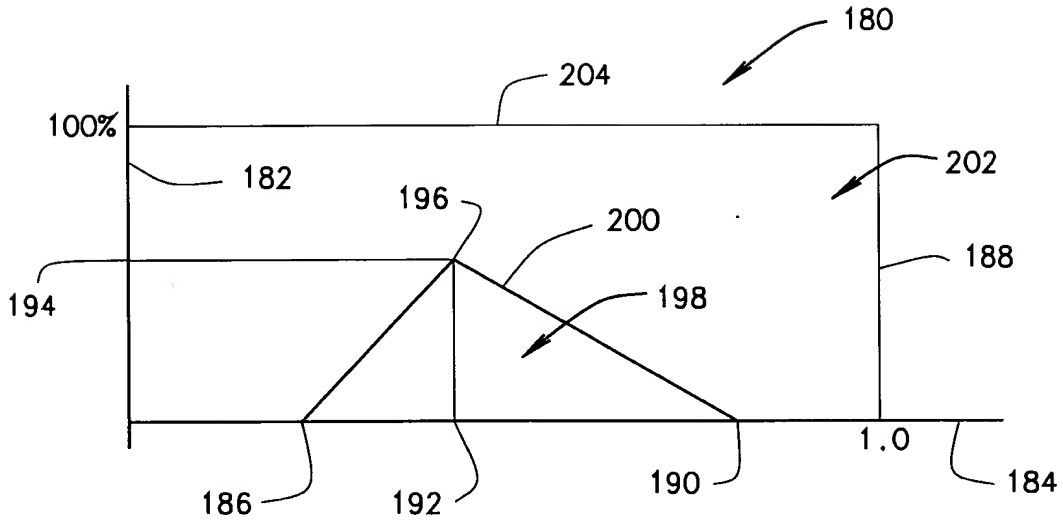

FIG. 5

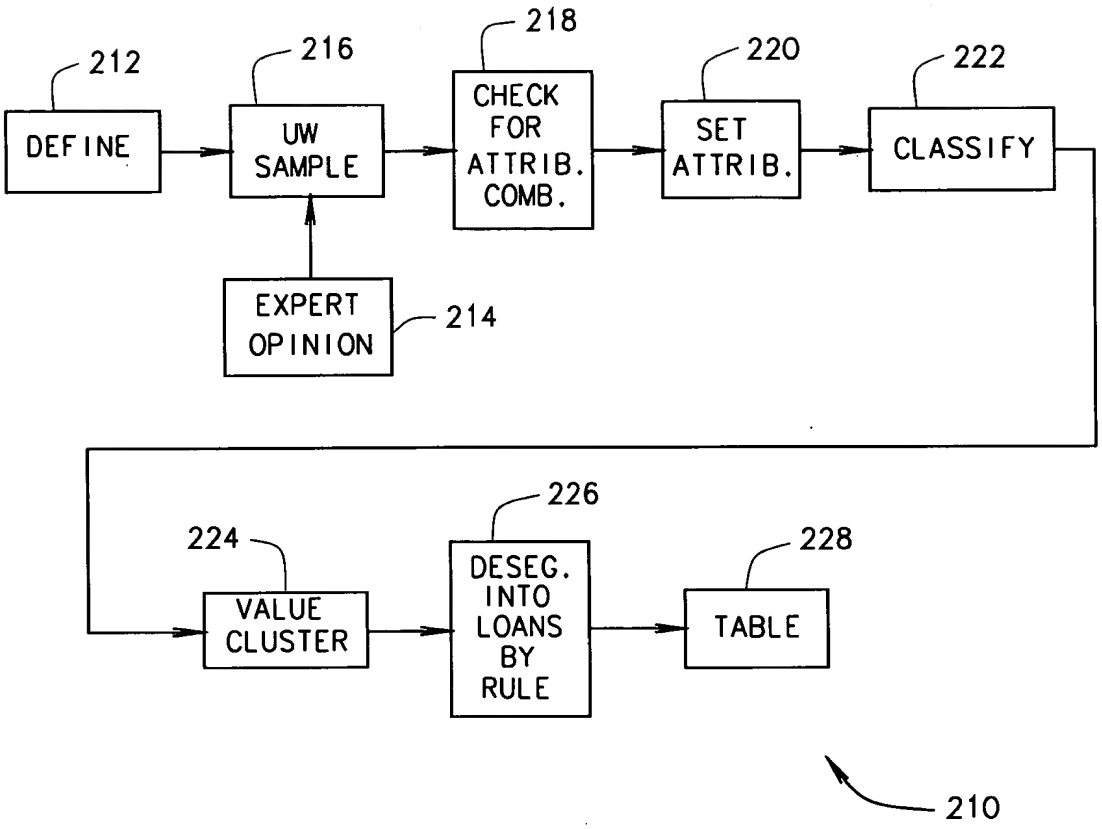
212
DEFINE
216
UW SAMPLE
218
CHECK FOR ATTRIB. COMB.
220
SET ATTRIB.
222
CLASSIFY
EXPERT OPINION
214
224
VALUE CLUSTER
226
DESEG. INTO LOANS BY RULE
228
TABLE
210

FIG. 6

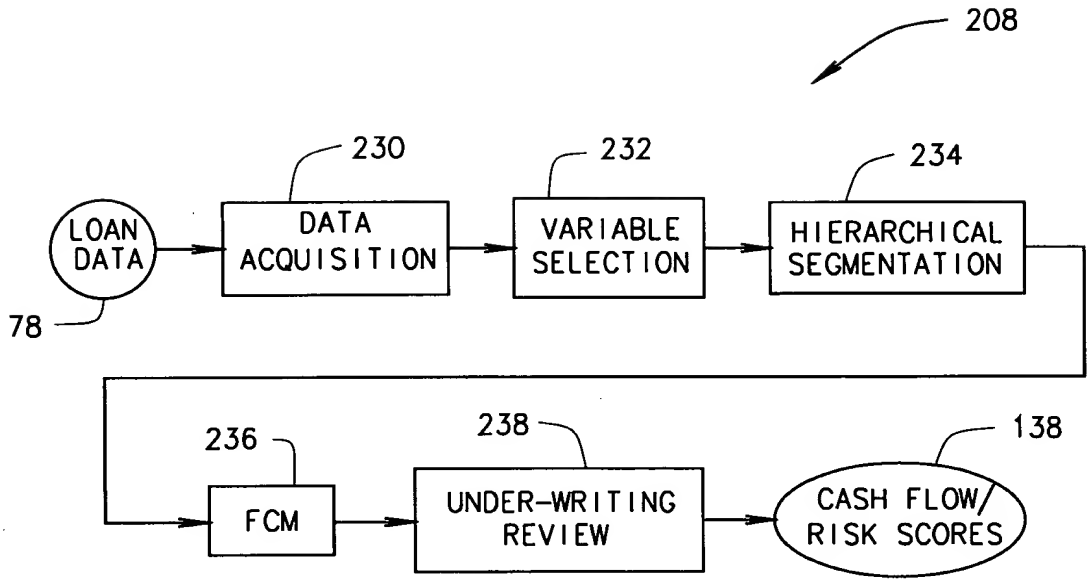
208
230
232
234
LOAN DATA
DATA ACQUISITION
VARIABLE SELECTION
HIERARCHICAL SEGMENTATION
78
236
238
138
FCM
UNDER-WRITING REVIEW
CASH FLOW/ RISK SCORES

FIG. 7

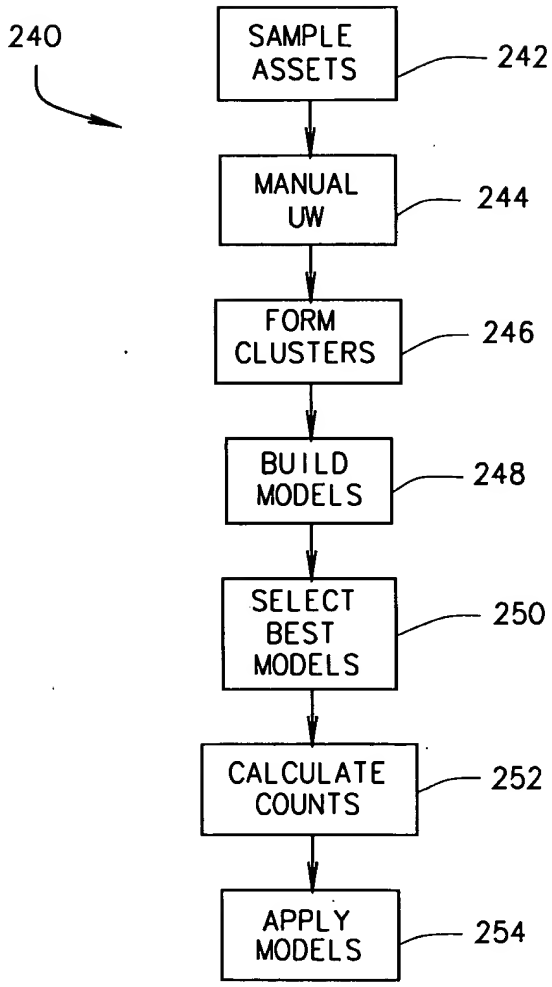
240
SAMPLE ASSETS
242
MANUAL UW
244
FORM CLUSTERS
246
BUILD MODELS
248
SELECT BEST MODELS
250
CALCULATE COUNTS
252
APPLY MODELS
254

FIG. 8

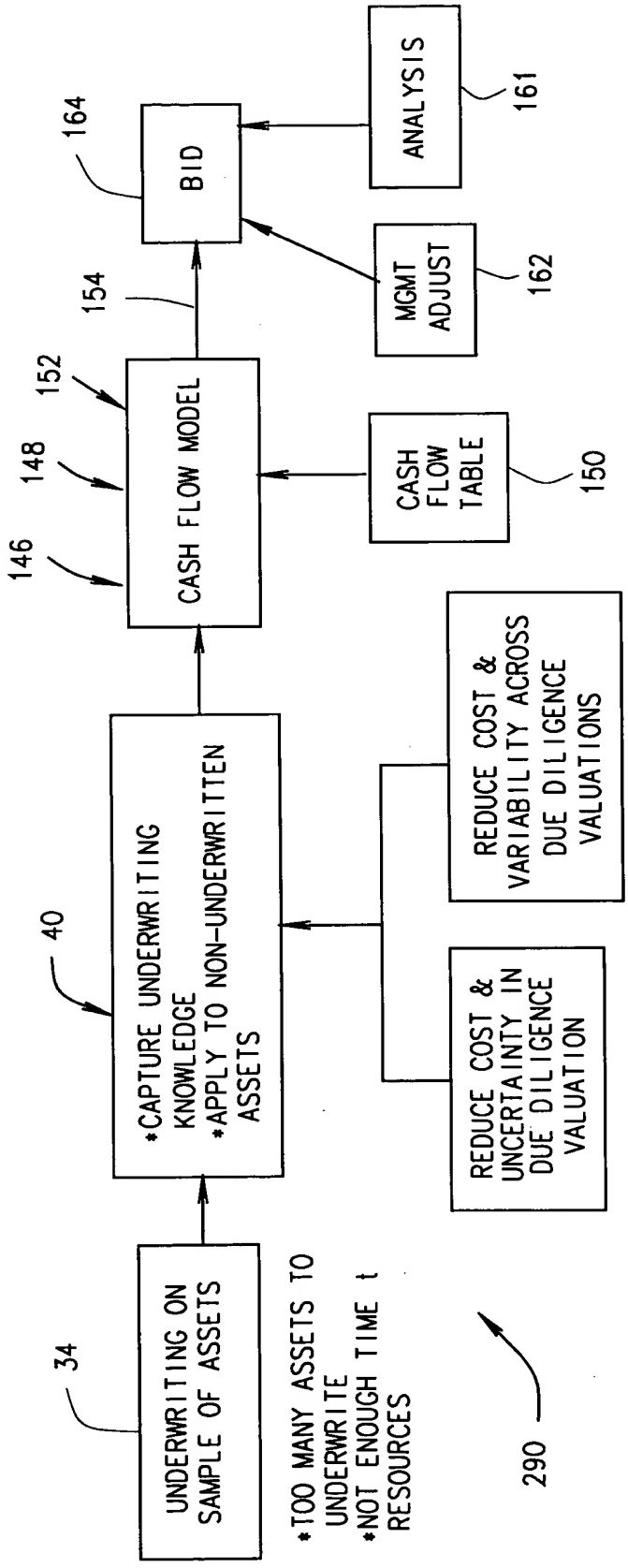
UNDERWRITING ON SAMPLE OF ASSETS
34
*TOO MANY ASSETS TO UNDERWRITE
*NOT ENOUGH TIME t RESOURCES
290
*CAPTURE UNDERWRITING KNOWLEDGE
*APPLY TO NON-UNDERWRITTEN ASSETS
40
REDUCE COST & UNCERTAINTY IN DUE DILIGENCE VALUATION
REDUCE COST & VARIABILITY ACROSS DUE DILIGENCE VALUATIONS
CASH FLOW MODEL
146
148
152
CASH FLOW TABLE
150
154
MGMT ADJUST
162
BID
164
ANALYSIS
161

FIG. 9

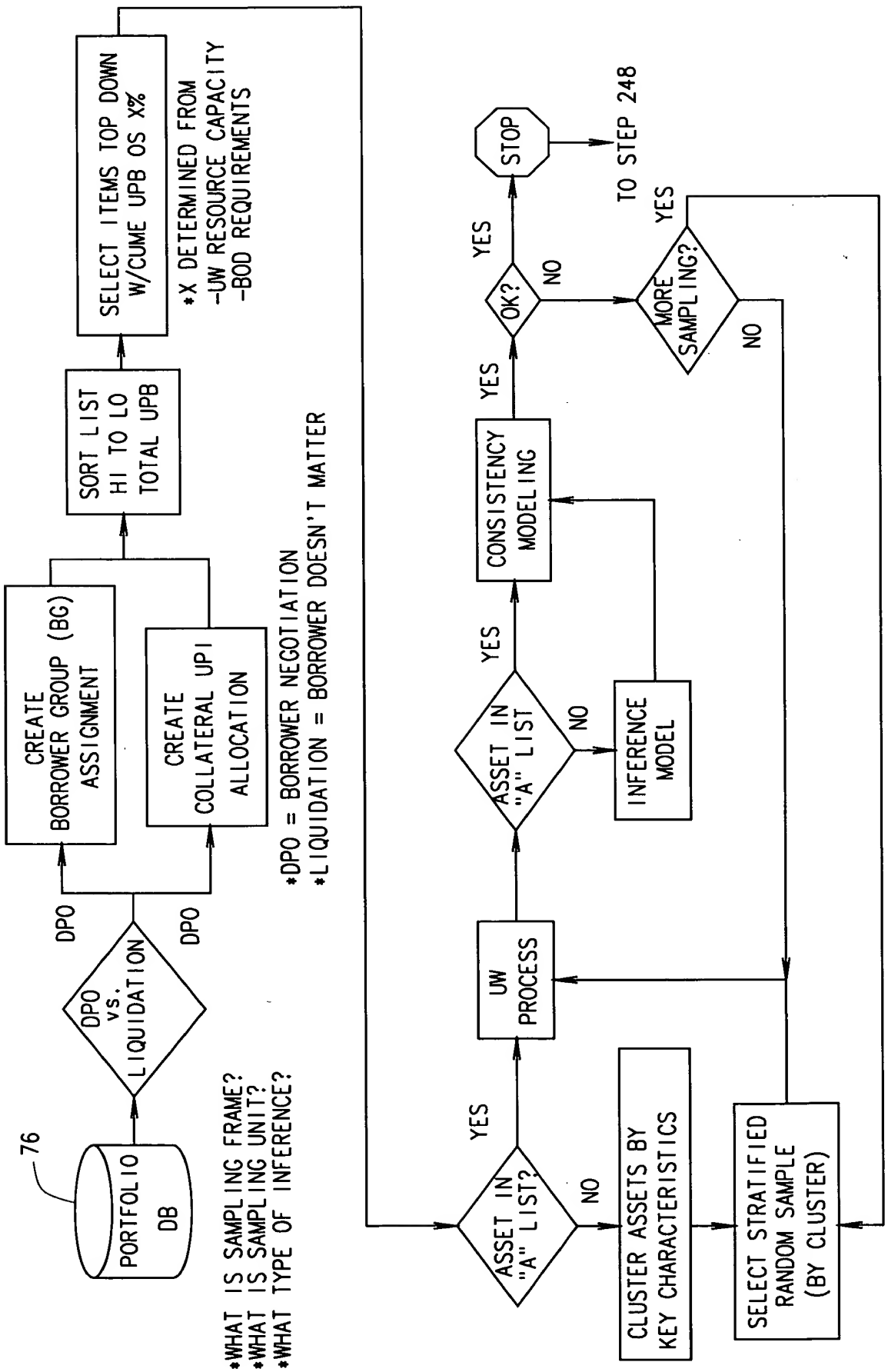
76
PORTFOLIO DB
*WHAT IS SAMPLING FRAME?
*WHAT IS SAMPLING UNIT?
*WHAT TYPE OF INFERENCE?
DPO vs. LIQUIDATION
DPO
DPO
CREATE BORROWER GROUP (BG) ASSIGNMENT
CREATE COLLATERAL UPI ALLOCATION
*DPO = BORROWER NEGOTIATION
*LIQUIDATION = BORROWER DOESN'T MATTER
SORT LIST HI TO LO TOTAL UPB
SELECT ITEMS TOP DOWN W/CUME UPB OS X%
*X DETERMINED FROM
-UW RESOURCE CAPACITY
-BOD REQUIREMENTS
ASSET IN "A" LIST?
YES
NO
CLUSTER ASSETS BY KEY CHARACTERISTICS
SELECT STRATIFIED RANDOM SAMPLE (BY CLUSTER)
UW PROCESS
ASSET IN "A" LIST
YES
NO
INFERENCE MODEL
CONSISTENCY MODELING
YES
OK?
NO
STOP
TO STEP 248
MORE SAMPLING?
YES
NO
246

FIG. 10

6 MODELS BUILT:

*MODELS DIFFER BY WHICH VARIABLES USED
*UW ASSETS GET THE MINIMUM ERROR PREDICTION (ACTUAL-PREDICTED)

248 BUILD MODELS

VARIABLES USED	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
LAND AREA	X		X	X	X	
BLDG AREA	X		X	X	X	
OLD APPRAISAL						X
GEN 1 PREDICTED CURRENT APPRAISAL	X	X	X	X	X	
GEN 1 PREDICTED REALIZED PRICE	X	X	X	X	X	
PROPERTY TYPE	X	X	X			
LOCATION	X	X		X		
-BY-						
COM/RES	X	X	X	X	X	X
GROUP (CLUSTER)	X	X	X	X	X	X

250

MODEL "WEIGHTS":

*EACH CELL IS COUNT OF TIMES THE MODEL PRODUCED BEST PREDICTION FOR UW ASSETS
*DETERMINES WEIGHTS FOR AVERAGING PREDICTIONS FOR NON-UW ASSETS

256

MODEL	ASSET CLASS	GROUP	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6	SUM
COURT AUCTION	COMMERCIAL	1	13	13	13	8	32	32	87
		2	29	25	29	24	19	19	148
	TOTAL								
COURT AUCTION	RESIDENTIAL	1	5	5	10	4	12	12	51
		2	4	7	9	13	23	23	59
		3	2	15	11	13	8	8	53
	TOTAL								163

252

258

MARKET VALUE	COMMERCIAL	1	16	13	11	15	21	21	86
		2	29	22	29	24	19	19	150
	TOTAL								236
MARKET VALUE	RESIDENTIAL	1	5	8	4	11	12	14	51
		2	8	9	10	15	19	19	59
		3	6	16	5	20	2	2	54
	TOTAL								164

FIG. 11

VARIABLE	CATEGORY/VALUE RANGE	ENCODING SCHEME
LOAN SECURED	(YES, NO)	YES = 1, ELSE = 0
LOAN TYPE	(REVOLVING,NON-REVOLVING)	REVOLVING = 1 ELSE 0
LAST PAYMENT	(0, 250 MM)	0 IF LAST PAYMENT = 0 ELSE 1
NOTICE OF DEFAULT SENT		PRIOR TO JUN 97 EQUALS 1 ELSE 0
ORIGINAL MATURITY DATE		PRIOR TO JUN 97 EQUALS 1 ELSE 0
SYNDICATED LOAN	(YES, NO)	YES = 1, ELSE = 0
LOAN GUARANTEED	(YES, NO, NAV)	YES = 1, ELSE = 0
COLLECTION SCORE	(0, 1)	
LIEN POSITION	(-1, 0, 1)	1 IF LIEN POSITION = 1 ELSE 0
CURRENT UPAID BALANCE/ORIGINAL BALANCE	(0, 2.9)	NORMALIZED TO (0, 1)
LAST PAYMENT TO INTEREST/LAST PAYMENT	(0, 1)	

80

138

FIG. 12

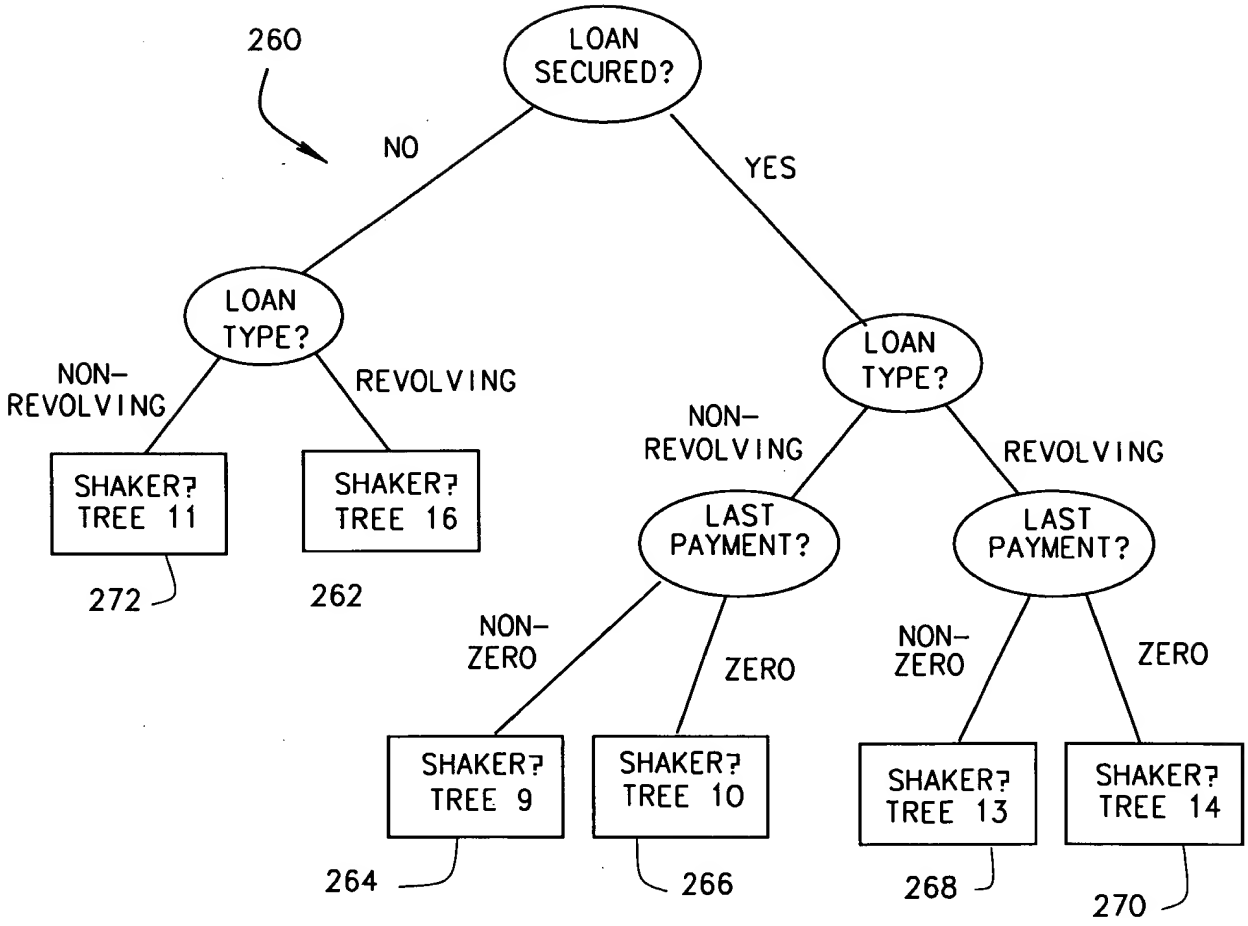
260
LOAN SECURED?
NO
YES
LOAN TYPE?
NON-REVOLVING
REVOLVING
SHAKER? TREE 11
SHAKER? TREE 16
272
262
LOAN TYPE?
NON-REVOLVING
REVOLVING
LAST PAYMENT?
LAST PAYMENT?
NON-ZERO
ZERO
NON-ZERO
ZERO
SHAKER? TREE 9
SHAKER? TREE 10
SHAKER? TREE 13
SHAKER? TREE 14
264
266
268
270

FIG. 13

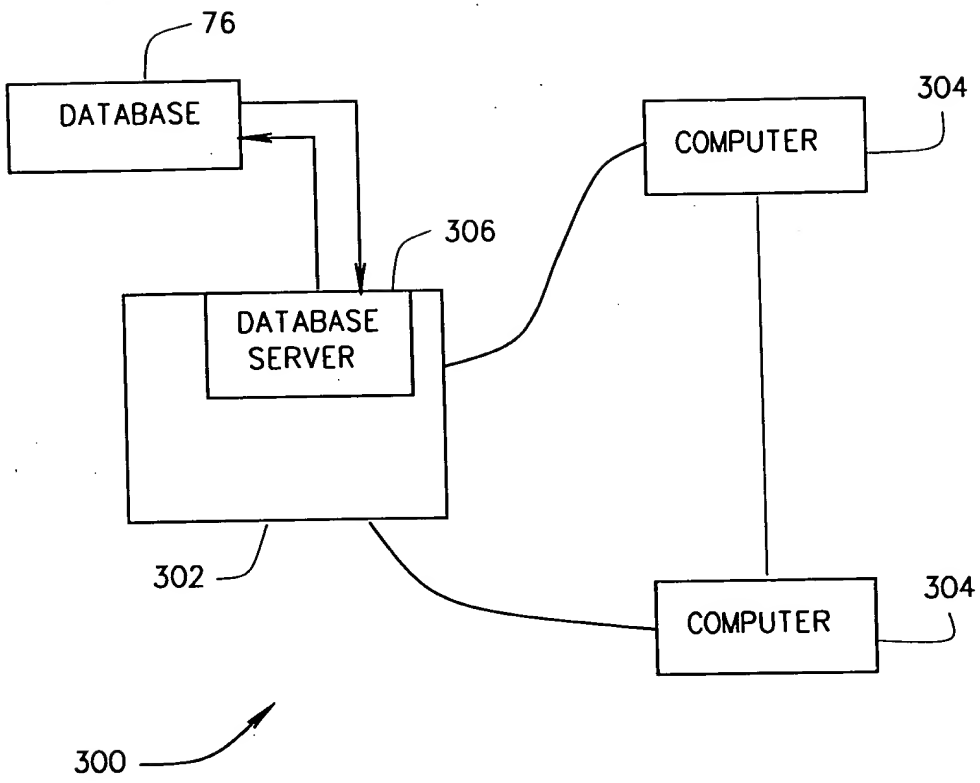
76
DATABASE
304
COMPUTER
306
DATABASE
SERVER
302
304
COMPUTER
300

FIG. 14